

Christopher R. Williams, PhD, PMP

Research Scientist III
Cooperative Institute for Research in Environmental Sciences (CIRES)
University of Colorado Boulder
in partnership with
National Oceanic and Atmospheric Administration (NOAA),
Earth System Research Laboratory (ESRL), Physical Sciences Division (PSD),
Weather and Climate Physics Branch, Boulder, Colorado

Christopher.Williams@colorado.edu

Research Interests

Analyzing multi-frequency profiling Doppler radar observations to study the vertical structure of air motion and hydrometeors to better understand the microphysical and dynamic processes of precipitating cloud systems.

Education

Ph.D.	1994	University of Colorado Boulder, CO (Electrical Engineering) Thesis: Deep convective clouds and their association with nonmigrating atmospheric diurnal tides in the tropical troposphere (Prof. Susan Avery)
M.S.	1986	Purdue University, West Lafayette, IN (Electrical Engineering)
B.S.	1985	California Polytechnic State University, San Luis Obispo, CA (Electronic Engineering)

Professional Experience

2005-Present	Research Scientist III, University of Colorado Boulder (CU), Cooperative Institute for Research in Environmental Sciences (CIRES) and National Oceanic and Atmospheric Administration (NOAA), Earth System Research Laboratory (ESRL), Physical Sciences Division (PSD), Boulder, Colorado
2001-2005	Research Scientist III, CU, CIRES, & NOAA Aeronomy Laboratory Tropical Dynamics and Climate Program (TDCP)
1997-2001	Research Scientist II, CU, CIRES, & NOAA Aeronomy Lab TDCP
1994-1997	Research Associate, CU, CIRES, & NOAA Aeronomy Lab TDCP
1991-1994	Graduate Research Assistant, CU, CIRES, & NOAA Aeronomy Lab, Tropical Dynamics and Climate Program
1988-1991	Development Engineer, Next Generation Perfusion Team, COBE Laboratories, Arvada, Colorado
1987-1988	Design Engineer, CO ₂ Laser Tube Development Group, HGM Medical Laser Systems, Salt Lake City, Utah

Faculty Appointments

2007-2008	Adjunct Faculty, Department of Aerospace Engineering Sciences, University of Colorado Boulder
2005-2006	Affiliate Faculty, Department of Atmospheric Science, Colorado State University, Fort Collins (non-paid)
2004-2008	Affiliate Faculty, Department of Atmospheric Science, University of Alabama at Huntsville (non-paid)

Patents

7,929,529	5 April 2011: Method and apparatus for estimating the velocity vector of multiple vehicles on non-level and curved roads using a single camera. Inventor: Christopher R. Williams
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Peer-Reviewed Publications & Conference Presentations

59 peer-reviewed publications and over 200 conference presentations
See publication list for more details

Professional Service and Contribution

NASA Precipitation Measurement Mission (PMM)

2000-Present	Member, NASA PMM Science Team
2007-Present	Chair, NASA PMM Raindrop Size Distribution Working Group
2007-Present	Member, NASA PMM Ground Validation Working Group

Department of Energy (DOE), Atmospheric Science Research (ASR) Program

2011-Present	Member, DOE ASR Science Team
2011-Present	Member, DOE ASR Vertical Velocity Focus Group

American Meteorological Society (AMS)

2013 (Sept)	co-chair, 36 th AMS Conference on Radar Meteorology, Breckenridge, CO, (400 abstracts and over 400 attendees)
2013-Present	Member, AMS Radar Committee

Scientific and Professional Memberships

2006-Present	Project Manager Professional (PMP), Project Management International
1990-Present	Member, American Geophysical Union (AGU)
1995-Present	Member, American Meteorological Society (AMS)
1998-Present	Senior Member, Institute of Electrical and Electronics Engineers (IEEE)

Honors and Awards

2014 (Feb)	American Meteorological Society Editor's Award
2006 (April)	CIRES Outstanding Scientist of the Year
1990 (Dec)	American Geophysical Union, Outstanding Student Presentation

Funding History

Eight (8) external grants as Principle Investor (PI) awarded funds to the University of Colorado Boulder with funding sources and amounts tabulated below. Note that all awards are processed with an off-campus overhead rate of 26% (or 20% for NOAA funds).

Sponsor	Start Date	Title	Award Amount	Accumulation
NASA	2/4/2013	Vertical correlation of DSD parameters: Incorporating GV data into integral tables to improve GPM precipitation retrieval algorithms	\$388,951	
NASA	7/1/2010	Temporal and spatial correlation of DSD parameters to improve satellite-based precipitation products	\$274,366	
NASA	7/3/2007	Vertical structure of precipitation retrieved from multi-frequency profiling radars for validating satellite-based precipitation products	\$310,000	
NASA	7/1/2000	Retrieval of hydrometeor drop size distributions from TRMM field campaign profiler Doppler velocity spectra observations	\$209,982	
			NASA	\$1,183,299
NOAA	4/1/2007	Vertical structure of precipitation retrieved from multi-frequency profiling radars for validating satellite-based precipitation products	\$146,917	
NOAA	4/1/2004	Microphysical properties of Monsoon precipitation retrieved from precipitation profilers in support of NAME	\$313,000	
			NOAA	\$459,917
DOE	8/15/2012	Collaborative Research: Reducing Tropical precipitation biases in CESM – Tests of unified parameterizations with ARM observations.	\$182,394	
DOE	9/15/2011	Vertical air motions over the Tropical Western Pacific for validating cloud resolving models	\$190,858	
			DOE	\$373,252
			Total External Funds	\$2,016,468

Field Campaign Deployments

Involved with instrument deployment and data analysis from these experiments

17. Mid-Latitude Continental Convective Cloud Experiment (MC3E), April-June 2011, Oklahoma
16. CalWater Experiment, November 2009-March 2010, California Sierra Nevada
15. CalWater Early Start Campaign, February-March 2009, California Sierra Nevada
14. Hydrometeorological Testbed 2008-2009 Winter Season (HMT-09), Dec. 2008-March 2009, California Sierra Nevada
13. Hydrometeorological Testbed 2007-2008 Winter Season (HMT-08), Dec. 2008-March 2009, California Sierra Nevada
12. Tropical Warm Pool-International Cloud Experiment (TWP-ICE), January-February 2006, Darwin, Australia.
11. Wallops Island Precipitation Variability Experiment, 2004-2006, Wallops Island, VA.
- 10 North American Monsoon Experiment (NAME), July-August 2004, Estacion Obispo, Mexico.
- 11 Front Range Pilot Project (FRPP), May-August 2004, Platteville, CO.
8. Distrometer Evaluation Experiment (DEVEX), April-Sept. 2002, Iowa City, IA.
7. Cirrus Regional Study of Tropical Anvils and Cirrus Layers – Florida Area Cirrus Experiment (CRYSTAL-FACE), July 2002, Miami, FL.
6. 2001 Multi-Frequency Radar IOP, ARM Southern Great Plains (SGP) Site, Lamont, OK.
5. Kwajalein Experiment (KWAJEX), July-Sept. 1999, Kwajalein Island, Republic of the Marshall Islands.
4. Tropical Rainfall Measuring Mission-Land-Biosphere-Amazonia (TRMM-LBA), January-February 1999, Ji Parana, Brazil.
3. Texas-Florida Underflight Experiment – Florida Phase (TEFLUN-B), August-Sept. 1998, Melbourne, FL.
2. Texas-Florida Underflight Experiment – Texas Phase (TEFLUN-A), April-June 1998, Houston, TX.
1. Tropical Eastern Pacific Precipitation Study (TEPPS), July-Sept. 1997, on the NOAA *R/V Ronald H. Brown*, 1500 nmi west of Panama City, Panama.

Invited International Work Exchanges

Visited and worked with Drs. Peter May and Alain Protat, Centre for Australian Weather and Climate Research, Melbourne, Australia, 2-13 October 2012.

Visited and worked with Dr. Alain Protat, Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS), Paris, France, 19-26 March 2011.

Prof. Anthony Illingworth, University of Reading, United Kingdom, visited C.R. Williams, May-Aug. 2006.

Visited and worked with Dr. Peter May, Bureau of Meteorology Research Centre, Melbourne, Australia, 24 April-11 May 2006.

Visited and worked with Dr. Peter May, Bureau of Meteorology Research Centre, Melbourne, Australia, 1-22 May 2005.

Visited and worked with Dr. Yuichi Ohno, Communications Research Laboratory, Tokyo, Japan, 1-22 November 1999.

Invited Seminars

- “Relationships between raindrop size distribution (DSD) parameters retrieved from vertically pointing multi-frequency profiling radars”, Centre for Australian Weather and Climate Research, Melbourne, Australia, 4 October 2012.
- "Vertical air motions and raindrop size distributions retrieved during TWP-ICE using vertically pointing profiling radars", Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS), Paris, France, 24 March 2011.
- "Radar Profilers used in multi-sensor Hydrologic Field Campaigns," Colorado State University, Fort Collins, invited by Prof. Steve Rutledge, 16 May 2005.
- "Profilers based Precipitation Observations during NAME 2004," University of Alabama at Huntsville, invited by Prof. Keven Knupp, 16 March 2005.
- "Vertical Structure of Precipitating Cloud Systems using Vertical Pointing Profilers," University of Miami, invited by Prof. Bruce Albrecht, 16 May 2003.
- "Precipitation studies using vertically pointing profilers," University of North Dakota, invited by Prof. Paul Kucera, 16 October 2002.
- "Simultaneous ambient air motion and rain drop size distributions retrieved from UHF vertical incident profiler observations," Aeronomy Lab Seminar, 5 Dec. 2001, Boulder, CO.
- "Meteorological applications of wind profilers for precipitation studies," invited by Riko Oki, National Space Development Agency (NASDA) of Japan, 11 Nov. 1999, Tokyo, Japan.
- "Rain drop size distribution deduced from UHF and S-band profilers using in support of ground validation of the TRMM satellite," invited by Yuichi Ohno of the Communication Research Laboratory of Japan, 9 Nov. 1999, Tokyo, Japan.
- "UHF and S-band profilers using in support of ground validation of the TRMM satellite," invited by Ali Tokay of the TRMM Project Office, NASA, Goddard Space Flight Research Center, 13 May 1999, Greenbelt, Maryland.

Teaching Experience

- Co-taught ASEN 5245 “Radar Remote Sensing” with Prof. Jeffery Thayer, Department of Aerospace Engineering Sciences, University of Colorado Boulder, Spring Semester 2008
- Guest Lectures on wind profiler radars for Prof. Steven Rutledge, Atmospheric Science Department, Colorado State University, Fort Collins, Spring 2007, Spring 2008, Spring 2009, and Fall 2009.